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XXV.—*On a new Genus of Algæ belonging to the family of the Nostochinæ.* By GEO. J. ALLMAN, A.B., L.R.C.S.I., Secretary to the Dublin Microscopical Society*.

[With a Plate.]

IN the early part of October 1842, I observed a substance of a pea-green colour abundant in the water of the Grand Canal Docks near Dublin. This substance was unequally distributed, being in some places collected in large quantity, while in others the water was quite free from it. It consisted of flocculent unattached masses varying much in size and occupying very different depths, some floating upon the surface, while others were observed suspended in the water, and might be traced downwards till the depth alone concealed them from the sight.

The general appearance of these masses, so far as their mechanical arrangement was concerned, might remind one of certain substances in the act of precipitation from their solutions, as camphor when undergoing precipitation from alcohol by the addition of water, or soap when separated by an acid from an aqueous or alcoholic solution, or perhaps still more of the curd of milk when diffused through the uncoagulable part of the fluid. In some places the green matter had been left by the retiring water upon the stones of the margin, and, here drying, had assumed a beautiful bluish green or verdigris colour without lustre.

On subsequently visiting the Canal Docks at several different periods, I observed that the substance under consideration appeared sometimes in but very small quantity, while on other occasions it was to be seen much more abundantly. This appearance and disappearance of the green matter would seem to be independent of the direct rays of the sun, and is probably the result of barometrical and other meteorological influences.

* Read before the Society on the 1st of December 1842.

Connected with the Dock is a deep shaft partly filled with water. The shaft is covered over with boards, so that the light is almost totally excluded. Into this some of the green substance had made its way, and on bringing up some of it in a phial, I found that it differed from that in the open dock in being of a duller green; in other respects I could detect no difference. I mention this as it illustrates an important fact in the physiology of the green matter, and would appear to establish the influence of light in the development of its colour.

Under the microscope this singular substance is seen to consist of exceedingly minute, simple, moniliform threads, with the globules composing them of uniform diameter, and the threads themselves variously but elegantly curved, and grouped together without order in a gelatinous matrix.

The green substance of the Dock then is a minute Alga of the family *Nostochinæ*, and evidently comes very near to the genus *Anabaina* of Bory Saint Vincent, and still nearer to an Alga discovered by Mr. Thompson in Ballydrain lake in the county Antrim, and which he names "*Anabaina? spiralis*," referring it doubtfully to Bory Saint Vincent's genus*.

From *Anabaina* of Bory Saint Vincent, the present Alga, as well as that of Mr. Thompson, differs in the uniform size of the articulations, Bory's genus being characterized by larger globules occurring at distinct intervals in the series. Were the size of the filaments to be considered of generic importance, there might perhaps be found in their great minuteness in the plant now under consideration another distinctive character. The mere size however of the filaments is scarcely of sufficient importance to entitle it to the rank of a generic character, yet, when taken in conjunction with others whose importance must be admitted, it may materially assist us in forming an opinion as to the real systematic rank of the Alga. It must be recollected too, that in the minuteness of the filaments the *Anabaina impalpabilis* is perhaps equally remarkable, a fact, which, if the plant last named be a real *Anabaina*, would deprive this peculiarity of all value as a generic distinction.

The absence however of the enlarged articulations in the Alga of the Canal Dock is a very obvious character, and upon the whole I consider myself justified in establishing for it a distinct genus, in which the *Anabaina? spiralis* of Thompson will also find a place. I suspect too that Bory's *A. impalpa-*

* See a very interesting paper by Mr. Thompson "On a minute Alga which colours the waters of Ballydrain lake near Belfast."—Ann. Nat. Hist. vol. v. p. 75.

bilis would be better removed to the new genus, as in the description of the species no allusion is made to the enlarged globules, and as in the minuteness of the filaments as well as in its general habit, it corresponds closely with the subject of the present paper and with the *A.?* *spiralis*. With respect however to the right of *A. impalpabilis* to occupy the ground assigned to it by Bory I speak with no certainty, nor would my present knowledge of the plant at all justify my meddling with it.

The only plant entirely corresponding with Bory's genus which I have had an opportunity of examining in a recent state is the *Anabaina membranacea*, specimens of which I obtained in the neighbourhood of Dublin last spring. This species possesses very distinctly the dilated globules; and in the large size of the filaments, and the general character and habit of the plant, is so completely different from the Alga of the Canal Dock, that I feel certain that any one who has once seen the two will not hesitate as to their complete generic distinction.

To the genus which I propose establishing for the reception of the present Alga, as well as for that of Mr. Thompson, I have given the name *Trichormus*: it may be characterized as follows:—

TRICHORMUS.

Fronde free, of indeterminate figure, consisting of simple, minute, moniliform, curved threads with articulations of uniform size, immersed in a gelatinous matrix. Name from *θρίξ* hair, and *ὄρμος* a necklace.

1. *T. spiralis*, Thompson. Plant either diffused through the water or floating on the surface; filaments of a rich green colour and regularly spiral; when dried on paper of a dull green without lustre.

Colouring the water of Ballydrain lake near Belfast, Mr. W. Thompson. July to October.

2. *T. incurvus*, mihi. Plant either diffused through the water or collected on the surface; filaments of a pea-green colour, crowded together confusedly in a gelatinous mass, variously curved but never regularly spiral, assuming when dried a fine verdigris-green colour without lustre. Pl. V.

In the Grand Canal Dock, Dublin. October.

The difficulty experienced by naturalists in assigning to many of the lower Algæ their exact rank among organized beings, renders any investigations into the structure and physiological history of these doubtful organisms of peculiar interest. So impressed was Bory Saint Vincent with a belief

in the animal nature of the beings which constituted his genus *Anabaina*, that he hesitated not to remove them from the vegetable kingdom. The peculiar motion of reptation which he describes them as possessing, and which he compares to the crawling of worms, would appear to be the chief grounds on which he assumes their animality, and he also tells us that the analysis of Vauquelin and Chaptal is entirely in favour of the animal nature of the *Anabainæ*.

In the Alga which constitutes the subject of the present paper no such motion could be detected, and the same appears to have been the case with the spiral Alga of Mr. Thompson. In all the observations which I have had an opportunity of making upon the green matter of the Canal Docks, the vegetable nature of this substance would appear to be fully borne out. The probability of its green colour depending on the influence of light has been already mentioned, and this fact, though not decisive, would yet go far to abolish any claim to animality. The phænomena attendant on the spontaneous decomposition of the Alga are altogether coincident with the same view. When a large mass is placed in a limited quantity of water, decomposition soon sets in, the green colour becomes duller, and finally assumes a dirty ferruginous hue, while the microscope can now no longer detect any trace of the original moniliform structure. A disagreeable odour is at the same time exhaled; but this odour is altogether different from that of decomposing animal matter, and possesses a purely vegetable character.

In the paper already alluded to, Mr. Thompson makes a similar remark with respect to the Alga of Ballydrain lake, the odour of which, in a state of decomposition, he compares to that of water in which flax had been steeped (see 'Annals,' vol. v. p. 78).

So far observations are in favour of the vegetability of the *Trichormi*; at the same time however it must not be forgotten that these curious organisms would appear to possess the power of changing under circumstances their specific gravity, being sometimes observed collected in large quantities upon the surface, sometimes suspended for a considerable depth through the fluid, and sometimes the whole mass will be found to have sunk to the bottom and disappeared, again to rise to the surface when circumstances favourable to its appearance should occur.

All these phænomena, however, wonderful and unaccountable as they are, would hardly justify us in attributing them to spontaneity; they are in all probability dependent on external causes, possibly of a meteorological character, and are

certainly quite distinct from real animal motion. In an interesting memoir by Morren* on the genus *Aphanizomenon*, this botanist ascribes to the agency of electricity motions somewhat similar to those of the *Trichormus*: Morren's paper is ingenious and well worth perusal, but it must also be admitted that his theory is based on insufficient grounds, and his analogies rather far-fetched and fanciful.

I have to notice also the occurrence in company with the Alga just described of the *Aphanizomenon incurvum* of Morren, the only record of which as a British plant is that of Mr. Thompson of Belfast, who discovered it in Ballydrain lake in July 1838 (see 'Annals,' vol. v.). Shortly after this it was also found in the pond of the Dublin Zoological Gardens by Miss Ball, who possesses specimens from that locality in her collection.

In investigating the subject of the present paper I have been enabled to examine dried specimens of Mr. Thompson's Alga. For the opportunity thus afforded me of comparing my plant with the authentic *A. ? spiralis*, I am indebted to the kindness of Miss Ball, whose valuable collection that lady obligingly allowed me to examine, and by whom I was liberally supplied with any specimens I might require.

XXVI.—*Notice of several Cases of Defective and Redundant Organization observed among the Araneidea.* By JOHN BLACKWALL, Esq., F.L.S.

AMONG the numerous difficulties with which arachnologists have to contend in their endeavours to acquire a correct knowledge of the *Araneidea*, the great liability of those animals to run into varieties, and the close resemblance which some species bear to others, are not the least formidable; indeed, as circumstances conducing largely to the introduction of fictitious species on the one hand, and to the confounding of those which are distinct on the other, they have proved fertile sources of error and perplexity. Ample evidence of the accuracy of this statement may be obtained by a careful comparison of the writings of those naturalists who hold the highest rank as authorities in this department of zoology.

A considerable share of attention having been bestowed upon variations in the colour and size of species, resulting from differences in age, sex, food, climate, and other conditions of a less obvious character, while those arising from ex-

* Histoire d'un genre nouveau de la tribu des Confervées nommé Aphanizomène; lu à l'Académie Royale de Bruxelles le 2 Décembre 1837.—See Annals, vol. v. p. 82.